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ABSTRACT

The Nutrition and Gerontology Services Project attempted to affect basal nutrition knowledge and address dietary changes for 478 California senior citizens who were live-in residents in homes for the aged. Two instruments were employed to measure study variables. Knowledge of nutrition was measured by the Nutritional Learning Scale, an orally administered 12-item multiple choice format which represented a sample of the content domain addressed by instruction strategies. Nutritional behavior was measured by the 24-hour dietary recall procedure. Subjects were divided into a control and experimental group. The experimental group was instructed with audiovisual materials, individual conferences, and written materials for dietary needs and behaviors. The control group received only written materials. Follow-up interviews were held with each group at a 1-month and a 3-month measurement point. The experimental group demonstrated significantly more growth in both the knowledge and behavior areas than did the control group at both the 1-month and the 3-month intervals. (Author/JMK)

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NUTRITION EDUCATION
AND
GERONTOLOGY SERVICES PROJECT

by

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ABSTRACT

Looking at the need to impart basal nutrition knowledge and address dietary changes for senior citizens the researchers looked at four hundred seventy-eight men and women live-in residents in homes for the aged. The study addressed both the immediate changes and the potential for long term effects by taking one month and three months measurements after the treatment. The experimental group were instructed with audio-visual materials, individual conferences and written materials for dietary needs and behaviors. The control group received only the written materials. Follow-up interviews were held with each group at both measurement points. The experimental group demonstrated significantly more growth in both the knowledge and behavior areas than the control group at both the one month and the three month intervals.

Framework of Study

New directions in life styles over the past ten years have led to changed eating patterns and nutritional practices. As a result, nutritional concerns have shifted from an emphasis on traditional nutrient deficiency diseases, such as scurvy and rickets, to an emphasis on "diseases of choices", such as obesity, anemia, dental caries and heart disease. Attesting to the need for improving eating habits and nutritional practices, numerous nutritional and health authorities claim malnutrition and poor eating habits may contribute to approximately one-third of the nation's health care costs, an estimated $230 billion in 1980, (Select Committee on Nutrition and Human Needs, 1976).

In reviewing the literature on studies identifying the nutritional status of older populations in the United States, both the California State Department of Public Health (1981) and the National Institute of Health and Human Development (1981) indicated the evidence of poor nutritional status within the poorer population groups in California which included residents over 65 years, (California State Department of Public Health, 1976). The Health and Nutrition Evaluation Study (HANES) (1976) conducted by N.I.H., documented poor nutritional statistics with respect to specific nutrients such as iron, vitamin A and calcium in older populations, (National Center of Health Statistics, 1976).

Most nutritional problems among the aged are associated with chronic disease and disability because 85 percent of those 65 and older in the United States have some form of chronic disease (Watkin, 1976). Half of these diseases, including coronary heart disease, hypertension, diabetes, arteriosclerosis, and obesity are thought to be rooted in malnutrition since over half of the aged consume diets which contain less than recommended levels of nutrients (National Center for Health Statistics, 1974). It also appears that about one-fifth of the aged have elevated serum cholesterol levels which markedly increases their risk of heart attacks (Department of Health, Education, and Welfare, 1977) while two in every five persons aged 65 and older are obese (Master, 1959).

Other studies conducted over the past 25 years have also consistently found malnutrition to be one of the most common and potentially serious problems of the aged in the United States. Young (1954) utilized 24-hour recall to evaluate the dietary practices of 1,640 industrial employees, age 64. In only ten percent of males and seven percent of females did diets meet standards of adequacy. Lyons and Trulson (1956) studied a random sample of 100 persons, age 65 or older, in a low to moderate income area of Boston. Highly variable dietary intake was found; one quarter of the sample consumed less than the recommended allowance of one or more nutrients. Finally, Le Bevit, (1965) examined the intake of 283 predominantly low income households and found the diets poorest in the homes of older persons.

Posner (1979), in summarizing the current problem stated: "National dietary intake surveys indicate that the 32 million persons currently over age 60 constitute a population very vulnerable to nutrient deficiencies." Posner concluded: "Among the reasons for this vulnerability is a lack of information about good dietary practices."

Research Questions

In order to overcome this lack of information as a contributing factor to the poor nutritional practices of the aged, the following research questions were posed:

1. Will a multi-sensory teaching approach impart basic nutrition knowledge?
2. Will basic nutrition knowledge effect changes in dietary practices?

Hypotheses

The above research questions gave rise to the following specific hypotheses:

1. One month and three months following instruction, there will be a significant difference in nutrition knowledge between program participants instructed in basic nutrition and those not receiving such instruction.

2. One month and three months following instruction, there will be a significant difference in nutrition behavior between program participants instructed in basic nutrition and those not receiving such instructions.

The instructional strategy designed to ameliorate the lack of nutrition knowledge possessed by the elderly consisted of a multi-sensory teaching approach incorporating two components. First, the nutrition concepts from the framework suggested by the White House Conference on Food, Nutrition, and Health (1970) were developed into an audio-visual presentation consisting of slides and a cassette. The content was also produced in a written/pictorial form. In both instances, the materials were available in English and Spanish language versions. Second, the audio-visual presentation was reinforced by a directed discussion/teaching followup conference.

Method

Sample: A total of 240 women and 238 men ranging in age from 65 to 81 residing in institutions and homes for the elderly within Los Angeles County participated in the study. Because of the difficulty in avoiding contamination of the control groups if both experimental and control conditions existed within the same institution, a non-randomized, intact groups design was employed in the study. Equal numbers of men and women were randomly selected from a sub-population of volunteers at five

facilities selected to receive the instructional program and at five other facilities identified as controls. Graduate students in Public Health supervised by the visiting nurses assigned to each of the institutions were trained by the authors to provide the instruction and administer the instruments for the collection of the data.

Instruments

Two instruments were employed to measure the variables in the study. First, knowledge of nutrition was measured by the Nutritional Learning Scale, an orally administered 12 item multiple choice format which represented a sample of the content domain addressed by the project instructional strategies. It was constructed by the project staff and reviewed for content validity by nutrition educators and measurement specialists. In a separate pilot study, the reliability of the instrument, as indicated by the Kuder-Richardson Formula 20 coefficent was 0.50. When corrected for its abbreviated length by the Spearman Brown formula with a factor of three, a reliability of 0.75 was obtained.

Second, nutritional behavior was measured by the 24-hour dietary recall procedure. This record, obtained from the project participants during an individual interview, was converted to a score on a scale of one to ten based on the adequacy of the nutritional content and balance in the participants' dietary intake during the prior 24 hours.

Procedure

The project study was designed to incorporate a non-randomized, intact groups posttest only design, with initial pre-experimental equivalence determined by application of the 24-hour dietary recall interview. Since the treatment and control groups did not initially differ in their dietary behavior, support was given to the assumption made by the researchers that the groups were equally lacking with respect to the nutritional knowledge content of the project instructional strategies.

Following the determination that the groups were initially equivalent, the participants in the experimental group were seen individually by a member of the project staff after the group viewed the audio-visual presentation. The individual conference consisted of a followup discussion and review to reinforce the concepts in the audio-visual presentation. They were also given the same information in a written/pictorial format to take with them for subsequent reference and study at their convenience. Members of the control group were given copies of the written/pictorial materials with the suggestion that it would be beneficial to them to read and study it. Following the completion of the instructional component of the project, followup interviews at one month and three month intervals were held with each participant in the experimental and control groups to obtain 24-hour dietary recall information and responses to the Nutritional Learning Scale.

Results and Findings

The null forms of the research hypotheses stated earlier were tested by applying a two-tailed t-test for the significance of the difference between uncorrelated means (Garrett, 1958) to the data obtained from the administrations of both dependent measures at the one month and three month assessment periods.

As can be seen from an examination of the data contained in Tables 1 - 4, the differences between the experimental and control groups on both dependent measures at both assessment periods were highly significant.

Based on the above results of the statistical analysis of the data, the following conclusions were drawn:

1. One month and three months after receiving instruction in nutrition, senior citizens in the Nutrition and Gerontology Services Project demonstrated more nutrition knowledge than those not receiving instruction.
2. One month and three months after receiving instruction in nutrition, senior citizens in the Nutrition and Gerontology Services Project demonstrated more positive changes in dietary behavior than those not receiving instruction.

It was also concluded, based on the observations and judgment of the project evaluators, that:

1. The staff (nurses and graduate student interns) demonstrated sufficient knowledge to successfully teach basic nutrition facts after reviewing the learning packets provided by the project.
2. The staff displayed positive and supportive attitudes toward nutrition education and the project.

Table 1

MEAN SCORES ON THE NUTRITIONAL LEARNING SCALE FOR THE TWO GROUPS ONE MONTH AFTER INSTRUCTION

GROUP	N	MEAN	S.D.	MEAN DIFFERENCE	t
Experimental	238	9.23	2.90		
				2.07	7.09**
Control	238	7.16	3.44		

**p <.01

Table 2

MEAN SCORES ON THE NUTRITIONAL LEARNING SCALE FOR THE TWO GROUPS THREE MONTHS AFTER INSTRUCTION

GROUP	N	MEAN	S.D.	MEAN DIFFERENCE	t
Experimental	219	8.01	2.50		
				1.02	3.93**
Control	197	6.99	2.77		

**p < .01

Table 3

MEAN SCORES ON THE 24-HOUR DIETARY RECALL
FOR THE TWO GROUPS ONE MONTH AFTER INSTRUCTION

GROUP	N	MEAN	S.D.	MEAN DIFFERENCE	t
Experimental	238	5.23	1.2		
				2.93	23.44**
Control	238	2.30	1.5		

**p < .01

Table 4

MEAN SCORES ON THE 24-HOUR DIETARY RECALL
FOR THE TWO GROUPS THREE MONTHS AFTER INSTRUCTION

GROUP	N	MEAN	S.D.	MEAN DIFFERENCE	t
Experimental	219	5.19	1.1		
				2.89	23.31**
Control	197	2.30	1.4		

**p < .01

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